

Classification and coding of warp ikat motifs: Introduction

[Supplemental material for the paper *Investigating cultural evolution using phylogenetic analysis: the origins and descent of the Southeast Asian tradition of warp ikat weaving* by Christopher D Buckley.]

This classification and coding system was developed specifically for use with warp ikat, defined as designs that are created on the warp fibers of a fabric prior to weaving, using a resist technique.

Ikat weavers assemble complex geometric motifs by repeating simple shapes ('primitives') and applying transformations to them (reflection, rotation, glide). This means that motifs can be classified and systematized by identifying the primitives that they are composed of and the symmetry operations that are used to produce the motifs. Classifying motifs in this way is important for two reasons. Firstly, it enables motifs to be identified that look superficially different but are actually closely related. Secondly, it allows superficially similar motifs that are actually composed of different primitives (and thus are different from a weaver's perspective) to be eliminated.

Warp versus weft axis

Weaving geometry differs from regular Cartesian plane geometry in one important respect: the two axes (x,y in the Cartesian plane, weft, warp in the weaving plane) are not equivalent on woven textiles. As an illustration of this consider these two simple shapes, which are equivalent in a Cartesian sense but different from a weaver's perspective (imagining the warp lying in the same direction as this line of text):



The basic shape that must be tied on the warp (shown in color) is different: in one case the weaver must tie resist knots along a row of warp threads and then along several bunches of warp threads lying at right angles. In the other case, it involves tying two diagonal rows of knots on the ikat frame. Another way of looking at this is that an older weaver must teach a younger weaver a different procedure for making these two motifs, and that the 'instruction' that is passed from one generation to another is different.

In the classification system, primitives are labeled A, B, C etc, in approximate order of increasing complexity. They are shown in color on the left hand side of the following pages. The motifs that are made up from them are given unique labels based on the symmetry operations used to create them:

r = reflection in weft axis

d = reflection in warp axis

i = rotation through 180 degrees

n = glide

Motifs that are composed of two or more simpler motifs are indicated by hyphens, for example, Ed-ITSN is the star shape ITSN enclosed by brackets Ed. This motif is found on textiles from Kisar and neighboring islands.

This labeling system is used in a semi-systematic way to differentiate motifs, since a fully systematic nomenclature would be too cumbersome for practical use, particularly with more complex motifs.

In many cases this approach reveals that motifs that look superficially different are actually similar from a weaver's perspective, because they are made up of similar shapes. For example the distinction between the "line" form of a motif and the "block" (filled in) is generally of no great significance to a weaver tying ikat resists, since the shape that must be remembered is the same in the first instance, even though the final result looks different. Duplication by reflection in the warp axis is also a trivial matter for the weaver, since in most cases this can be done by tying several two (or more) sets of warp bundles together and then separating them into mirror image halves after tying and dyeing. These features explain why (for example) the group of simple motifs labeled Gr and Grd, some of which appear different at first sight are actually very similar as far as weavers are concerned, and often appear together in the same textile or in similar textiles:



Van Vuuren drew attention to this phenomenon in her account of interviewing Tanimbar weavers [12]. She noted that they paid little attention to the shapes that she recognized as 'motifs' on finished textiles, instead preferring to discuss the shapes that they needed to remember when tying resists onto the warp.

Not all of the differences in primitives correspond to meaningful differences from a weaver's point of view. For example, in many cases square curls, hexagonal shaped curls and smoothly curved curls are essentially equivalent. For this reason motifs that occur interchangeably on textiles of a tradition or closely related traditions are grouped together into a single character, since the differences between them convey no useful information. This has been done on a pragmatic basis, based on analysis of a large set of textiles and observation of weavers in the field.

A degree of familiarity with weaving motifs and textiles generally is required in order to make these judgments and others like them, and the challenges involved are quite analogous to the decisions that must be made when coding linguistic data or morphological characteristics in biology.

Conservatism and copying in warp ikat decoration

As mentioned, weavers use a limited vocabulary of primitives to construct motifs. These are simple shapes that are used in building-block fashion to construct more complex motifs. The use of this vocabulary and the conservative nature of most traditional weaving is particularly apparent in cases where warp ikat weavers have consciously copied motifs from external sources. The cloths most commonly imitated by Indonesian weavers in the past few centuries have been Indian imported silk patola (made using a complex double ikat technique), and the Indian printed cotton trade cloths that were themselves imitations of patola designs. These cloths had high status amongst Indonesian families and were often used as heirloom and bridewealth items, and their designs were sometimes copied into locally made warp ikat. For example, the biboek'sa motif of the Biboki weavers of West Timor has been correctly identified by Barrkman [46] as a patola-inspired creation, with the characteristic patola features of white designs outlined in black on a dark red ground. The biboek'sa motif successfully evokes patola textiles and includes some innovations in layout and coloring, but, remarkably, the motif itself has been re-constructed from primitives that were already familiar to Biboki weavers. It has also been modified from an all-over design to a linear format suited to motifs organized into bands in Biboki sarongs:



Fragment of Indian printed cotton trade cloth, 19th century (detail)



Contemporary Biboki sarong with biboek'sa design, based on Indian trade cloths

A rough impression of the overall shape of the Indian motif is recognizable in the Biboki sarong, together with the floral feature at the center and presence of hooks, but the Biboki version is actually composed of hook-and-rhomb shapes that were familiar to the Biboki weavers. The original Indian design falls outside the classification system for warp ikat presented here since it is composed of entirely different shapes, but the Biboki version is classifiable as the motif Mnrd-IN, which is grouped with other similar motifs into the character JnrdIN.

Barnes, in her classic study of Lamaholot textiles [4], also reviewed a number of instances of motifs that were said to be “patola” derived. She found that in most cases these had also been re-interpreted by Lamaholot weavers, to the extent that she found it difficult to identify the Indian prototypes, so thoroughly had they been assimilated into local tradition.


























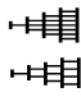




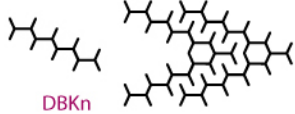

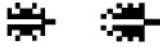


















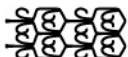
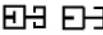
















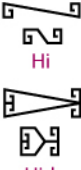















Motifs








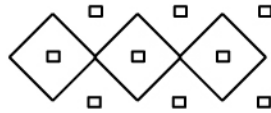


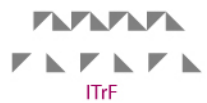





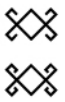
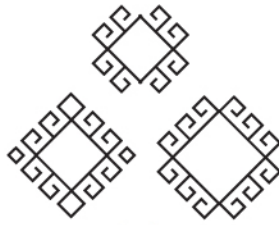
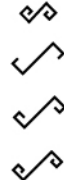




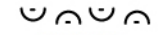

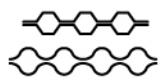







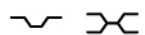
























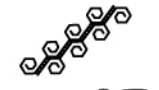









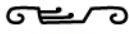
The following pages show examples of motifs from warp ikat textiles. Drawings are by the author.

Geometric motifs

The column on the right lists primitives, the basic shapes from which motifs are composed. The main section shows motifs derived from those primitives.

(references: refer to main paper)

Primitives	Motifs
A 	<div>   </div> <div>     </div> <div>  </div> <div>         </div>
B 	
C 	
D 	
	<div>          </div> <div>     </div>
E   	<div>               </div> <div>    </div>
F  	<div>    </div>
G  	<div>     </div>
H  	<div>           </div> <div>      </div>
HK  	<div>   </div>

Primitives	Motifs
I	<div>  </div> <div>  Ir  IrF  IrdF  INrd  Ir2  Ir2d  IrWd-blocks  IrW-dashA </div>
IT	<div>  </div> <div>  ITrF  ITrF-lam  ITSN </div>
J	<div>  </div> <div>  J  Jr  Jrd  Jnrd  Ji  JiKF  JiSW </div>
K	<div>  </div> <div>  Kr  KrdF-dots  KrdF  KrWd  KrW  KrW-dots  KrWN  KrWNd  KrWN2  KrWN2d  KrW-dash  KJ  KK  KHC </div>
M	<div>  </div> <div>  Mr  Mrd  Mrd2  Mi  Mid  Mird  MdS  MrdS  Mi4  Mi4d  Mi4rd  Mi4d-interlock  M2rdV  Mnrd  Mnd-IN  Mnrd-IN  Min  Mind  Minrd  Mnrd  Mi-DSF  Mi-DSFn  Mi2  Mi2n  MinL  MinLrd  MDn  MDn-IN  MDnd  MDnd-IN  MDnrd-IN  Mi-FTH </div>

warp direction →



ZNAG
(Tai Daeng weft ikat, after [11] pl.27)



ZBHC
(Amanuban, author's coll KT88)



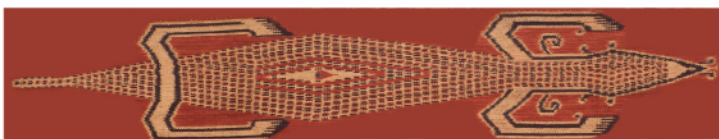
ZBHC
(Insana, author's coll KT112)



ZHhead
(Tai Daeng, author's coll KT80)



ZHhead
(Lampung, after [2] p268)



ZCR
(Iban, author's coll. KT51)



ZCR
(Mindanao, Mandaya after [57] fig.1.54)



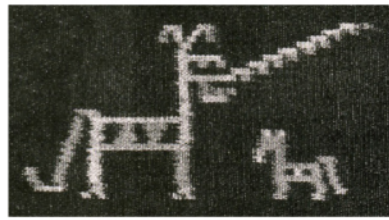
ZCRTL
(Belu, author's coll. KT28)



ZCSRT
(Amanuban, author's coll. KT88)

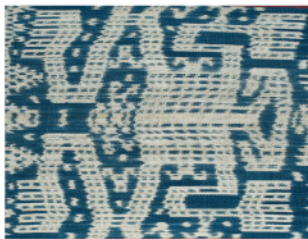


ZEQ
(Ngada, author's coll. KT35)



ZEQ
(Ngada, after [8] fig.5-17)

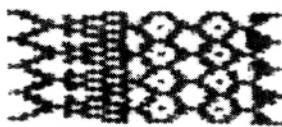
warp direction →



ZFH
(Amanatun, author's coll. KT90)



ZFMR
(Lamalera, author's coll. KT16)



ZTF
(Tanimbar, Yamdena, after [55] p37 fig.17)



ZHG
(Ngada, after [66] 46)



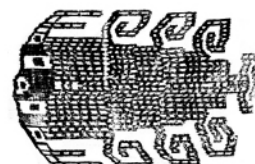
ZHPT
(Hainan Meifu Li, author's coll. CET365)



ZHSTP
(Babar, author's coll. CL2)



ZHSB
(Luang, after [64] 543)



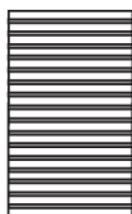
WB
(Amanatun, after [44] pl.51)



asymTS
asymmetric
one or more panels plus waistband



SSB
symmetric
one panel



STA
symmetric
two or more panels



STB
symmetric
two or more panels



STC
symmetric
two or more panels

Other design/layout features
(motifs shown are intended to illustrate design
features rather than to represent particular motifs)



rhomb
motifs organized
into diamond
shaped panels



J-des
motifs composed of
semi-abstract
rhombic hook shapes



pan
motifs divided into
panels separated by
dividing bands



i-des
motifs with 2-fold rotational
symmetry (only)